



WINZLER & KELLY
CONSULTING ENGINEERS

Ref. 03-1428-01001
03-1847-02100

October 9, 2003

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
Blue Lake Forest Products
P.O. Box 1176
Arcata, CA 95518



Re: Report of Findings for Phase II Investigation,
Blue Lake Forest Products/ Aalfs property, 1589 Glendale Drive,
Arcata, CA

Dear Mr. Taylor and Mr. Aalfs:

INTRODUCTION

Winzler & Kelly Consulting Engineers is pleased to submit this Report of Findings for performing a limited Phase II assessment, as originally requested on June 27, 2003, and including the updated scope per the letter from Winzler & Kelly dated of July 17, 2003. The purpose of the investigation was to perform limited sampling at suspect areas on the Blue Lake Forest Products (BLFP) and Mr. Charles Aalfs parcels north of Glendale Drive and the former McNord property, south of Glendale Drive, in order to expedite the sale of these parcels. The scope of work includes the review and sampling of parcels Assessor Parcel Number (APN) 516-101-006, -017, -040, -041, -060, -064, -068, 516-111-004, -005, -006, 015, -033, & 516-151-019. It also includes the properties owned by Charles Aalfs APN 516-101-002 -059 & -063.

Purpose

The purpose of this hydrogeologic investigation was to assess potential hydrocarbon, metal, or pentachlorophenol (PCP) and tetrachlorophenol (TCP) impacts to the soil and groundwater at each of the BLFP and Aalfs' parcels noted above. Exploratory borings were used to collect soil and groundwater samples in each area of investigation. The borings were thereafter abandoned by refilling of the hole with concrete or cement.

Site Location

Blue Lake Forest Products and the Aalfs' property of interest are located around 1589 Glendale Drive, in Glendale, California. Glendale is an unincorporated area located immediately north of Highway 299, approximately two miles west of Blue Lake. Most of the existing mill complex is located along the north side of Glendale Drive. The property located along the south side of

▼ Creative Solutions for Over 50 Years ▼

633 Third Street, Eureka, CA 95501-0147
tel 707-443-8326 fax 707-444-8330
www.w-and-k.com

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 2

Glendale Drive, the former McNord property, is currently undeveloped. A site vicinity map and site map can be found on Figures 1 & 2, respectively, in Attachment A.

Vicinity Description

Glendale is a sparsely populated rural community. The Blue Lake Forest Products mill complex and adjacent Aalfs' parcels are generally surrounded by industrial and commercial properties. The mill is located on the toe of the foothills, which rise to the north. Sparse residential housing exists along area roads to the east and west, which ascend northward into the foothills. Several residential homes, fronting on Glendale Drive, are located immediately south and west of the mill complex. Most of the mill site is essentially flat, with increasing up-slope of the site to the north.

Background

Background information was reviewed including interviews with Bruce Taylor and other appropriate personnel with knowledge of the prior uses of these parcels. Aerial photographs were also reviewed in order to investigate prior land use and to determine where potential contamination causing activities might have been located. This information was used to determine the extent of sampling necessary and the most representative locations to collect soil and groundwater samples. The areas most likely to have soil or groundwater impacts were selected, using the approach that if no impacts were observed in these areas, other areas of the property would also likely be free of impacts.

Aerial photos reviewed at the Humboldt County Department of Public Works span from 1948 to 1996 and are included in Appendix A. In 1948, the site was relatively undeveloped; a few houses north of Glendale Drive and one large building (located south of Glendale Drive and east of the future Dip Tank building) were present. By 1954, the Dip Tank Building, three mills with tee pee burners, and a square log pond were present on the site. The former Tread Mill was located on Aalfs' parcel APN 516-010-059, the BLFP Mill was located on APN 516-011-033 directly north of the Blue Lake Forest Product office buildings. The third mill, the former McNord Mill, is located south of Glendale Drive, and south west of the Dip Tank Building on APN 516-015-019. A log pond was located north of Glendale Drive and the BLFP mill, on APN 516-011-033. Refer to Figure 3, Attachment A, for the locations of these historic mills.

The former Trend and McNord Mills were stud mills, which produce framing type lumber and typically do not use wood preservatives or anti-fungal chemicals. The tee pee burners associated with these mills were used to burn the wood byproducts such as bark and saw dust (which again typically did not contain any manmade chemicals). The square log pond, north of the BLFP Mill, was used only as a storage and transportation device. Tannins, a naturally occurring chemical in evergreens, would likely have been the only agents found in the log ponds present at this site.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 3

In 1958, the three mills and associated tee pee burners remain; only the McNord Mill tee pee burner is visibly smoking. The square log pond north of Glendale Drive remains and an additional oval log pond is present south of the McNord Mill. At the former Trend Mill site, which previously consisted of two separate buildings, the southern most building has been expanded and the northernmost building has been demolished. Just north east of the former Trend Mill in the 1958 photo, appears to be another log pond. The large building, located south of Glendale Drive and east of the future Dip Tank building in the 1954 photo, has been demolished.

In 1962, the three tee pee burners are visibly smoking and the mills are consequently assumed to be in operation. The large square pond north of Glendale Drive is still in use, but the ovate log pond south of the former McNord Mill appears to have been reduced to less than half of its original size.

By 1966, the two large ponds have been converted to log decks, the tee pee burners and mills remain. The former McNord Mill has been visibly expanded in the 1966 photo. Another addition to the site in the 1966 photos is a water tank located in the northeast corner of the large log deck north of Glendale Drive (a portion of which was previously the square log pond). Prior to 1966, the area east of the BLFP Mill and north of Glendale Drive had been an empty field; the field is now used for lumber storage.

The 1970 aerial photos are similar to the 1966 photos in that the previous log ponds remain to be used as log decks and the tee pee burners remain but are not smoking. There are few differences in site use and development from 1966 to 1970 with the exception that a large open-sided storage shed has been constructed in the northwest corner of the field used as lumber storage, east of the BLFP Mill.

From 1970 to 1974, the tee pee burner associated with the former Trend Mill appears to have been removed and a large storage shed building that remains at present, has been constructed; it is unclear from the photo whether this mill is still in operation.

In 1981, the buildings associated with the former McNord Mill no longer remain. Also in 1981, buildings associated with the former Trend Mill have been demolished, with the exception of the large storage shed mentioned above. The 1988 aerial photo of the site does not reveal any significant changes from the 1981 photos nor were there any significant changes since 1981 observable in the 1996 photo.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 5

An *Enforceable Monitoring and Maintenance Agreement* was executed on August 16, 1997. This Agreement required the implementation of the *Post-Remedial Operation and Maintenance Plan*, which was approved by the DTSC on April 25, 1997. The Agreement and the Maintenance Plan detailed the regular inspection and maintenance of the cap installed over soil near the green chain and of the concrete slab floor of the site's unit dip tank building. The Agreement and Maintenance Plan also detailed the periodic sampling and analysis of groundwater and surface waters adjacent to the green chain.

The remedial actions were implemented and completed by March 9, 1998, and the monitoring and maintenance actions were implemented immediately thereafter. A deed restriction was recorded on February 4, 1998.

A Five Year Comprehensive Review was written in December 2002. This review concluded that the existing green chain cap appears to be preventing surface waters from contacting the residual PCP/TCP soils and also to have prevented the PCP/TCP in the impacted soils from leaching into the groundwater. The area surrounding the former dip tank has been thoroughly cleaned and inspected by the North Coast Regional Water Quality Control Board. The property containing the former dip tank has been sold subsequent to December 2002, and monitoring of this area was recommended to cease due to the fact that all the groundwater samples collected from the monitoring well within this parcel contained non-detectable concentrations of all analytes tested since 1997.

Hydrogeologic Setting

Well drilling records indicate that several feet of gravel fill typically underlie the mill area. The substrate, to depths of 30 to 40 feet, appears to consist of interbedded clays, silts and sands, generally as a clayey mix, with interbeds of gravels and cobbles. Silty sands are variously described as gray, brown and black. Clays are commonly described as gray, greenish, and rusty orange (iron stained), with some organic rich clays noted in the flatter site areas. Gravels are described as rounded and/or fractured. The substrate in this area may represent river terrace deposits and/or valley alluvium.

The above description is consistent with the descriptions logged for the borings installed during this investigation. The site predominantly consists of one to two feet of sandy gravel or cement/concrete at the surface, underlain by silty clays with sand, to clayey silts with sand. Colors of these soils range from dark grays to yellowish browns.

Boring logs for all the borings installed with the hollow stem auger rig during this investigation can be found in Attachment B.



Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 6

Mill Creek (also called Hall and Noisy Creek) flows southward out of the foothills and converge into Hall Creek approximately 1,500 feet east of the mill site and just north of Glendale Drive. Hall Creek then continues southwesterly towards the Mad River, passing about 550 feet southeast of the site. Lindsay Creek is located off the northwest corner of the site. All creeks and drainage courses in the area flow south-westerly into the Mad River channel, which is located about 1,100 feet southwest of the site. Glendale Drive and/or Highway 299 interrupt direct sheet-flow surface drainage from the mill site to the Mad River. A drainage ditch bisects the BLFP Mill site (See Figure 2), flowing east to southeasterly during the wet season. The drainage ditch crosses beneath Glendale Drive via a culvert, and continues southeasterly, entering Mill Creek, which then drains into the Mad River. No class A streams flow through the property.

Hydrographic data from existing monitoring wells on the site indicate that ground water levels range from approximately 7 to 33+ feet below the ground surface (bgs), with seasonal fluctuations of 10 feet or greater and a general groundwater gradient to the west. Groundwater interface estimated during this investigation ranged from 11 to 13 feet in the parcels south of Glendale Drive and from 7 to 22 feet in the parcels north of Glendale Drive.

The calculated historical groundwater gradients, based on existing monitoring wells onsite, are generally to the southwest as expected based on topographic relief and the direction toward the Mad River. Gradients range from southwest at 209.79 degrees Azimuth to north at 343.0 degrees Azimuth. The magnitude of the slope ranged from 0.73 feet per 100 feet to 2.16 feet per 100 feet (see Table 1, Attachment C)

PHASE II INVESTIGATION

A total of twenty borings were installed during this phase of work. Locations of these borings are displayed on Figure 4; Attachment A. The work was divided into three areas according to property owner and location. These divisions were as follows:

Former McNord Site South of Glendale Drive

APN 516-151-019, south of Glendale Drive, was the site of the former McNord Mill. The stud mill had a teepee burner, but reportedly no greenchain, however, this area was sampled in order to demonstrate the lack of impacts on this property. Six borings were installed on this parcel in a grid like pattern in order to obtain samples that are representative of the entire property. Borings were installed near the location of the former tee pee burner, under the Mill itself, and in the location of the former log ponds. Three of the borings were installed with a hand auger (B-1, B-6, and B-8) and three of these borings were installed with a hollow stem auger (B-2, B-13, & B-16) as detailed in a subsequent section. Soil samples were collected from the hand borings and soil and groundwater samples were collected from the drill rig borings.



Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 7

Blue Lake Forest Products Parcels North of Glendale Drive

The hydrocarbon impacts due to the old underground storage tanks and the pentachlorophenol (PCP) impacts at the green chain and BLFP mill are well documented, and no additional sampling was required on the south end of APN 516-111-033. Assessor Parcel Numbers 516-101-17, -040, -064, -068, and the north end of 516-111-033 as well as 516-111-015 were determined as areas to be sampled based on the lack of previous investigation on these parcels. These are the sites of the former square log pond and more recent log deck as well as the milled log storage. Parcels adjacent to these are the locations of the current office buildings and other residential areas unlikely to have soil or groundwater impacts associated with industrial activities.

A total of eleven borings were installed in this area, six of which were installed with a hand auger (B-3*, B-5, B-7, B-9, B-10, & B-15) and five of which were installed by the hollow stem auger method (B-11, B-12, B-14, B-17, & B-19) as described below. Soil samples were collected from the hand borings and soil and groundwater samples were collected from the drill rig borings.

Aalfs' Parcels North of Glendale Drive

APNs 516-101-002, -059, & -063 were sampled in order to determine the effect the former Trend Mill may have had on the soil and groundwater in this area.

A total of three borings (B-3, B-4, & B-18) were installed by the hollow stem auger method as described below. Soil and groundwater samples were collected from these borings

FIELD ACTIVITIES

Preparation

The following drilling preparation activities were performed prior to initiating or implementing any of proposed drilling activities at the site:

- Boring and Well Permits were obtained from the HCDEH;
- The proposed location of each boring and well was marked at the site with white paint and the Underground Services Alert (USA) was notified (at least 48 hours prior to any subsurface investigation) to determine and mark the locations of the subsurface utilities; and
- The HCDEH was notified at least five days in advance of the day proposed for the implementation of the field activities.

Drill Cuttings

Drill cuttings were placed in DOT approved 55-gallon drums. The labeled drums are stored adjacent to the installed boring pending characterization and disposal.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 8

Boring Installation

A total of nineteen borings were installed at the site during August 8 through 15, 2003. Eleven of these borings were drilled with a hollow stem auger in order to collect soil samples at six inches and five feet bgs and groundwater samples near groundwater elevation. Nine of these borings were installed using a hand auger in order to collect soil samples at six inches bgs and three to five feet bgs.

On August 13, 14, & 15, 2003, Winzler & Kelly observed Diamond Core Drilling of Redding California during the construction of eleven borings (Borings B-2, B-3, B-4, B-11, B-12, B-13, B-14, B-16, B-17, B-18, & B-19). Borings were drilled using a hollow stem auger, and were installed in accordance with the Winzler & Kelly Standard Operating Procedures (SOP's), included in Attachment D. Borings were advanced to at least two feet below the groundwater interface. Soil samples were collected at six-inches and then five feet intervals bgs using a split spoon sampler lined with brass sleeves. A Winzler & Kelly field scientist described soil at each site according to the Unified Soil Classification System (USCS). Soil color was described according to a Munsell Color Chart. Boring construction logs are contained in Attachment B. Subsequent to sample collection and boring description, the borings were plugged with cement to the surface. Field notes are included in Attachment E.

Soil Sampling

Soil samples were collected at six-inches and then five feet intervals. Soil samples were collected in brass tubes via a 2-inch diameter split spoon sampler. All soil samples were collected from the borings per the Winzler & Kelly SOP for "Soil and Water Sampling from a Boring" (Attachment D). The soil samples were logged, labeled and held in a chilled cooler pending transport under Chain of Custody documentation to North Coast Laboratories for the following analyses:

- Pentachlorophenol & Tetrachlorophenol by Canadian Pulp Method
- Volatile Organics (full list) by EPA Method 8260 8270?
- CAM 5 metals (Cd, Cr, Ni, Pb, Zn) by EPA Method 200.7 & 200.9

Due to the high density of the first two feet bgs at three of the boring locations drilled with the hollow stem auger (B-12, B-16, & B-17), soil samples were not collected at six inches bgs but at two-feet bgs. Samples at six inches bgs in these locations contained a high density of large, coarse gravel or concrete.

On August 8, 11, & 12, 2003 Winzler & Kelly installed borings B-1, B-3, B-3*, B-5, B-6, B-7, B-8, B-9, B-10, & B-15 using a hand auger. These borings were installed from six inches to five feet deep depending on soil characteristics. Soil samples were only collected at six inches bgs at hand auger borings B-5, B-8, & B-10 due to the high density of gravels below six inches bgs.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 9

Boring B-3 was installed using a hand auger to six inches below ground surface on August 11, 2003 and then was further installed using the hollow stem auger to a total depth of twenty five feet bgs on August 13, 2003. A sample was collected at six inches bgs by the hand auger method, and at 5 feet bgs by the hollow stem auger method. The boring label B-3 was inadvertently duplicated. Boring B-3* was installed by the hand auger method and boring B-3 was installed by both methods as described above. Please see Figure 3, Attachment A for the boring locations.

Grab Groundwater Sampling

A groundwater sample was collected from each boring installed with a hollow stem auger (B-2, B-3, B-4, B-11, B-12, B-13, B-14, B-16, B-17, B-18 & B-19). Groundwater samples were collected using a disposable bailer, in accordance with the Winzler & Kelly SOP's (Attachment D) and were submitted to North Coast Laboratories LTD, a state-certified laboratory for the following analyses:

- Pentachlorophenol & Tetrachlorophenol by Canadian Pulp Method
- Volatile Organics (full list) by EPA Method 8260
- CAM 5 metals (Cd, Cr, Ni, Pb, Zn) by EPA Method 200.7 & 200.9

Immediately after collection, groundwater samples were capped, labeled, and logged onto the chain-of-custody form, and placed in an iced cooler pending delivery to the analytical laboratory. All non-disposable sampling equipment was decontaminated by steam cleaning or with Alconox soap and distilled water between samples.

RESULTS OF INVESTIGATION

Results of the investigation have been described according to location and land owner. Laboratory analytical results for all samples collected can be found in Attachment F.

Soil Analytical Results

Former McNord Property Parcels South of Glendale Drive

Soil samples collected from borings installed on APN 516-151-019 (B-1, B-2, B-6, B-8, B-13 & B-16) contained generally low concentrations of heavy metals (see Table 2, Attachment C). Detections of metals in the soil is to be expected and the levels appear to be at what would be considered naturally occurring or "back ground" levels. The soil sample collected in boring B-2 at five feet contained 100 parts per million (ppm) chromium and 91 ppm Nickel, which may be slightly above background but are generally within the expected range. Cadmium was not detected above laboratory detection limits in any of the samples collected this area south of Glendale Drive. Averages of chromium, lead, nickel, and zinc detected at the six borings were 46.4, 11.6, 56.1, and 52.5 ppm respectively.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 10

Pentachlorophenol (PCP) and Tetrachlorophenol (TCP) were not detected above laboratory detection limits in any of the borings installed on APN 516-151-019. Volatile organics were also not detected above laboratory detection limits at this parcel with the exception of toluene, which was reported at low levels in borings B-2 (6"), B-6 (2.5'), & B-13 (6") at 11.0, 7.4, and 11.0 parts per billion (ppb) respectively. Boring B-6 (2.5') also reported low levels of m, p, xylenes at 6.7 ppb. Toluene and xylene are present in many different industrial products including any petroleum based product such as gasoline, diesel, or lubricating oils. They also occur in paint, antifreeze, and other solvents. It is likely that the low levels present in the soil in this area are due to the years of running trucks and other heavy equipment in the area, and associated exhaust and minor leaks from the equipment. Toluene and xylene will both break down naturally in the environment. The drinking water maximum contaminant level (MCL) for toluene is 0.15 ppm or 150 ppb and xylene is 1.75 ppm (1,750 ppb). There is no established levels for soils, but given that the levels in the soil are lower than the drinking water MCL, they are likely not of concern.

Blue Lake Forest Products Parcels North of Glendale Drive

Soil samples collected from borings installed on APNs 516-101-017, -010, -064, -008, and the north end of 516-111-033 as well as 516-111-015 (B-3*, B-5, B-7, B-9, B-10, B-11, B-12, B-14, B-15, B-17, & B-19) also contained generally low concentrations of metals at typical background levels normally found in soil. The average detection of metals in the eleven borings installed on the parcels north of Glendale Drive was 50.4, 45.2, and 49.0 ppm for chromium, nickel, and zinc respectively. Chromium and nickel were detected in boring B-11 (5'), both at 150 ppm; all other borings detected results less than 100 ppm for chromium, nickel, and zinc. Detections of lead in this area were either below the laboratory detection limit of 10 ppm or just slightly above it. Cadmium was reported below the laboratory detection limits in all boring samples in this area with the exception of the sample collected at boring B-15 (6"), which reported 44 ppm. It is unclear why the cadmium would be present at these higher levels only in the area of B-15, particularly since this area has only been utilized as a log deck. Cadmium is used in electroplating and for pigments used in paint, printing ink and plastic. The sample collected at three feet in boring B-15 was below the laboratory detection limit (<2.0) for cadmium so it appears that this detection is very localized.

Pentachlorophenol (PCP) and Tetrachlorophenol (TCP) were not reported above laboratory detection limits on any of the parcels north of Glendale Drive. Volatile organics were below laboratory detection limits with the exception again of low levels of toluene detected in borings B-7 (3.5'), B-11 (6"), B-12 (2'), B-12 (5'), B-14 (2'), B-15 (6"), B-15 (3'), and B-19 (6"). Toluene was detected at 1,100 ppb in B-7 (6"). Ethylbenzene was reported only at boring B-7 (6") and boring B-19 (6") at 58 ppb and 12 ppb, respectively. Again, these results are likely due to the years of equipment operation in the area, and the higher results at boring B-7 are likely due to a more recent spill in this area and should degrade with time.

Soil analytical results discussed above can be found in Table 3, Attachment C.



Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 11

Aalfs' Parcels North of Glendale Drive

Soils samples collected from the three borings installed at APNs 516-101-002, -059, & -063 (B-3, B-4, & B-18) again reported metals at levels that would be considered background levels. Chromium, lead, nickel, and zinc were detected from these three borings on average at 57.7, 18.0, 50.3, and 49.3 ppm respectively. Cadmium was reported below laboratory detection limits in all the soil samples collected on the Aalfs' property.

Pentachlorophenol (PCP) and Tetrachlorophenol (TCP) were not reported above laboratory detection limits on all of the Aalfs parcels. Volatile organics were also below laboratory detection limits with the exception of low levels of toluene detected in borings B-3 (6"), B-4 (3"), and B-4 (5') at 13, 110, and 10 ppb respectively.

Soil analytical results discussed above can be found in Table 4, Attachment C.

Groundwater Analytical Results

Groundwater samples were collected only from the borings that were installed with the hollow stem drill rig.

Former McNord Property South of Glendale Drive

Metals were detected in the groundwater samples collected in this area of investigation at borings B-2, B-13, and B-16. The average detection of the samples collected in this area is 2,133 ppb for chromium, 286 ppb for lead, 3,133 ppb for nickel, and 3,433 ppb for zinc. Cadmium was detected in boring B-13 at 36 ppb and borings B-2 and B-16 were below the laboratory detection limits for cadmium. TCP was not detected above laboratory detection limits in these borings; however, PCP was detected in boring B-16 at 0.49 ppb. This detection is below the primary maximum contaminant level (MCL) of 1.0 ppb for PCP. The positive result for PCP at B-16 was confirmed by a second column test according to the laboratory reports. All VOCs were below the laboratory detection limits in all the borings except for a low level of toluene (0.87 ppb) reported in boring B-16.

The level of metals reported in the groundwater from these borings are above the drinking water MCLs for Cadmium, Chromium and Nickel. The MCLs are 5 ppb for Cadmium, 50 ppb for Chromium, and 100 ppb for Nickel. Lead has an action level of 15 ppb and Zinc has a second MCL of 5000 ppb. The levels reported are also higher than what typically naturally occurs in groundwater as reported in "Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd ed., John Hem, USGS paper 2254." Cadmium typically has a median level of 1 ppb in natural water and Chromium is typically present at levels below 10 ppb. The median concentration for lead is 1 ppb, for Nickel is 10 ppb, and for Zinc is reported at 20 ppb.

Mr. Bruce Taylor and

Mr. Charles D. Aalfs

October 9, 2003

Page 12

It is unknown whether the levels of metals reported for the groundwater samples collected south of Glendale are due to former operations at this site or other sites in the area or are naturally occurring. However, the levels reported north of Glendale Avenue are an order of magnitude lower than those reported south of Glendale. It is recommended that no drinking or irrigation wells be installed in this area as the metal content of the water is considerably above the MCLs. However, these were shallow groundwater samples and any legally installed well must be at least 50 feet deep, which may result in the well drawing from a different aquifer than was sampled in this investigation. This area is also served by potable water from the Fieldbrook Community Services District and new development in this area would likely connect to the potable water system.

Groundwater analytical results discussed above can be found in Table 5, Attachment C.

Blue Lake Forest Products Parcels North of Glendale Drive

Metals were reported in the groundwater samples collected on BLFP property north of Glendale Drive at borings B-11, B-12, B-14, B-17, and B-19. The average detections of the five borings sampled in this area for chromium, lead, nickel, and zinc were 622, 87, 758, and 860 ppb respectively. Cadmium was not reported above laboratory detection limits in any of the samples. Neither volatile organics nor TCP were reported above the laboratory detection limits in this area. PCP, however, was detected at the laboratory detection limit at 0.30 ppb in B-14. This detection is below the primary maximum contaminant level of 1.0 ppb for PCP.

The result of 0.30 ppb PCP in B-14 was confirmed by a second column, according to the laboratory reports. In the sample collected from boring B-11, the laboratory control sample (LCS) recovery was slightly above the upper acceptance limit for zinc. This recovery indicates that the sample results may be slightly higher than the actual amount in the samples. Also, due to a laboratory error, sample B-11 was extracted one day outside of the holding time.

Again, the metal levels reported for these borings were above the corresponding primary MCLs for Chromium and Nickel and the action level for lead but below the secondary MCL for Zinc.

Groundwater analytical results discussed above can be found in Table 6, Attachment C.

Aalfs' Parcels North of Glendale Drive

Metals, with the exception of cadmium, were again reported in the samples collected from borings B-3, B-4, and B-18 on the Aalfs' parcels. The average detections of the three borings sampled in this area are 623, 71, 940, and 1,100 ppb for chromium, lead, nickel, and zinc respectively. Again, the metal levels reported for these borings were above the corresponding primary MCLs for Chromium and Nickel and the action level for lead but below the secondary MCL for Zinc. Neither volatile organics nor PCP/TCP were reported above laboratory detection limits in this area.

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 13

Due to laboratory error, samples B-18 and B-3 were extracted one day outside of the holding time. The LCS recovery was slightly above the upper acceptance limit for zinc in borings B-18 & B-3. This recovery indicates that the sample results may be slightly higher than the actual amount in the samples.

Groundwater analytical results discussed above can be found in Table 7, Attachment C.

CONCLUSIONS AND RECOMMENDATIONS

The levels of metals detected in soil samples collected in all three areas investigated during this phase of work were fairly uniform. The levels reported were all close to what would be considered background levels of metals in soil that would typically be found in native soils. Slightly raised levels of metals were detected in some of the soil samples, but the levels were only slightly above background levels and are not likely of concern.

Low levels of toluene, ethylbenzene and xylene were also detected at low levels in the soil at various points in all three areas. The levels detected are likely due to minor petroleum spills and leaks associated with the years of vehicle operation on the site and are at levels that do not appear to be of concern.

PCP and TCP were not reported above the laboratory detection levels in any of the soil samples collected from any of the sites. Levels of toluene and PCP detected in groundwater samples at boring B-16 and B-14 were lower than the drinking water maximum contaminant levels for these constituents and therefore should not be of concern.

Raised levels of metals were reported in all groundwater samples collected during this investigation. Levels of metals were noticeably higher in the area south of Glendale Drive than in the BLFP and Aalfs parcels north of Glendale Drive. The levels of metals detected in groundwater samples collected from the BLFP and Aalfs parcels north of Glendale Drive were fairly consistent with each other. The levels of metals reported in the groundwater were generally considerably above the constituents regulating level for drinking water. For this reason it is recommended that the groundwater under these parcels not be used as a potable or agricultural water source. However, it is unlikely that wells would be installed in this area as Fieldbrook Community Services District supplies potable water to this entire area.



WINZLER & KELLY
CONSULTING ENGINEERS

Mr. Bruce Taylor and
Mr. Charles D. Aalfs
October 9, 2003
Page 14

Winzler & Kelly appreciates the opportunity to provide these services to you. If you have any questions regarding this report, please contact me at (707) 443-8326.

Sincerely,
WINZLER & KELLY

Patrick Kaspari, P.E.
Manager, Environmental Assessment
and Remediation Department

sw

Attachment A

- Figure 1: Site Vicinity Map
- Figure 2: Site Map
- Figure 3: Historical Use Map
- Figure 4: Boring Location Map
- Aerial Photos 1954 - 1996

Attachment B

- Boring Logs

Attachment C

- Table 1: Historical Groundwater Gradient Calculations
- Table 2: Soil Analytical Results- Parcels South of Glendale Drive
- Table 3: Soil Analytical Results- Parcels North of Glendale Drive
- Table 4: Soil Analytical Results- Aalfs Parcels
- Table 5: Groundwater Analytical Results- Parcels South of Glendale Drive
- Table 6: Groundwater Analytical Results- Parcels North of Glendale Drive
- Table 7: Groundwater Analytical Results- Aalfs Parcels

Attachment D

- Winzler & Kelly SOP's

Attachment E

- Field Notes

Attachment F

- Laboratory Analytical Results

Attachment A
Figures

Table 1
Groundwater Gradient Summary
Blue Lake Forest Products

Date	Gradient Direction (degrees azimuth)	Gradient Magnitude (ft/100 ft)
12-Jan-98	187.51	1.14
8-Apr-98	179.35	1.50
8-Jul-98	184.88	4.23
26-Jan-99	156.45	1.75
14-Jul-99	176.88	3.92
13-Apr-00	181.37	2.07
19-Oct-00	182.14	4.78
7-Jun-01	181.46	4.33

All gradient calculations revised to exclude MW-7 due to artificially low groundwater elevation

Table 2
Soil Analytical Results
 BLFP Phase II Investigation
 Parcels South Of Glendale Drive
 Metal PCP/TCP results reported in parts per million (ppm) *ug/g*
 Volatile Organic results reported in parts per billion (ppb) *ug/kg*

Boring number	Installation Method	Sample Depth	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-1	hand	6"	8/8/03	<2.0	48	12	73	58	<1.0	<1.0	ND
B-1	hand	2.6'	8/8/03	<2.0	43	10	65	55	<1.0	<1.0	ND
B-2	hollow stem	6"	8/15/03	<2.0	53	13	56	64	<1.0	<1.0	ND ¹
B-2	hollow stem	5'	8/15/03	<2.0	100	<10	91	59	<1.0	<1.0	ND
B-6	hand	6"	8/8/03	<2.0	44	<10	57	52	<1.0	<1.0	ND
B-6	hand	2.5'	8/11/03	<2.0	41	<10	51	49	<1.0	<1.0	ND ²
B-8	hand	6"	8/11/03	<2.0	36	11	46	47	<1.0	<1.0	ND
B-13	hollow stem	6"	8/15/03	<2.0	42	12	63	68	<1.0	<1.0	ND ³
B-13	hollow stem	5'	8/15/03	<2.0	43	<10	62	46	<1.0	<1.0	ND
B-16	hollow stem	5" *	8/15/03	<2.0	30	<10	27	46	<1.0	<1.0	ND
B-16	hollow stem	10' *	8/15/03	<2.0	30	<10	26	34	<1.0	<1.0	ND

Avg. 122 23 57 149

¹ Toluene detected at 11 ppb

² Toluene detected at 7.4 ppb; m, p, xylene detected at 6.7 ppb

³ Toluene detected at 11 ppb

*Samples collected at B-16 were at 5" and 10' below ground surface due to the density of gravel at six inches below ground surface

Table 3
Soil Analytical Results
BLFP Phase II Investigation
Parcels North of Glendale Drive

wrong { Metal PCT/TCP results reported in parts per billion (ug/g)
Volatile Organic results reported in parts per million (ug/Kg)

Boring number	Installation Method	Sample Depth	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-3*	hand	6"	8/11/03	<2.0	32	<10	28	43	<1.0	<1.0	ND
B-3*	hand	4.5'	8/11/03	<2.0	96	<10	23	19	<1.0	<1.0	ND
B-5	hand	6"	8/12/03	<2.0	35	15	39	65	<1.0	<1.0	ND
B-7	hand	6"	8/12/03	<2.0	8.3	<10	8.6	16	<1.0	<1.0	ND ¹
B-7	hand	3.5'	8/12/03	<2.0	47	10	45	95	<1.0	<1.0	ND ²
B-9	hand	6"	8/13/03	<2.0	38	11	43	51	<1.0	<1.0	ND
B-9	hand	2'	8/13/03	<2.0	38	<10	44	49	<1.0	<1.0	ND
B-10	hand	6"	8/13/03	<2.0	47	<10	53	54	<1.0	<1.0	ND
B-11	hollow stem	6"	8/13/03	<2.0	45	<10	64	63	<1.0	<1.0	ND ³
B-11	hollow stem	5'	8/13/03	<2.0	150	<10	150	89	<1.0	<1.0	ND
B-12	hollow stem	2'*	8/14/03	<2.0	45	<10	58	50	<1.0	<1.0	ND ⁴
B-12	hollow stem	5'	8/14/03	<2.0	65	11	32	73	<1.0	<1.0	ND ⁵
B-14	hollow stem	2'*	8/14/03	<2.0	44	<10	58	51	<1.0	<1.0	ND ⁶
B-14	hollow stem	5'	8/14/03	<2.0	58	<10	28	26	<1.0	<1.0	ND
B-15	hand	6"	8/13/03	44	44	<10	62	54	<1.0	<1.0	ND ⁷
B-15	hand	3'	8/12/03	<2.0	24	<10	26	31	<1.0	<1.0	ND ⁸
B-17	hollow stem	2'*	8/14/03	<2.0	57	11	56	51	<1.0	<1.0	ND
B-17	hollow stem	5'	8/14/03	<2.0	73	<10	34	33	<1.0	<1.0	ND
B-19	hollow stem	6"	8/14/03	<2.0	26	<10	31	49	<1.0	<1.0	ND ⁹
B-19	hollow stem	5'	8/14/03	<2.0	35	<10	23	16	<1.0	<1.0	ND

¹ Toluene detected at 1,100 ppb, Ethylbenzene detected at 58 ppb

² Toluene detected at 11 ppb

³ Toluene detected at 11 ppb

⁴ Toluene detected at 26 ppb

⁵ Toluene detected at 10 ppb

⁶ Toluene detected at 46 ppb

⁷ Toluene detected at 10 ppb

⁸ Toluene detected at 110 ppb

⁹ Toluene detected at 90 ppb; Ethylbenzene detected at 12 ppb

*Samples were miss labeled at 6", actual samples were collected at 2' below ground surface

Table 4
Soil Analytical Results
Aalfs Phase II Investigation
Aalfs Parcels
Metal PCP/TCP results reported in parts per billion (ug/g)
Volatile Organic results reported in parts per million (ug/Kg)

Boring number	Installation Method	Sample Depth	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-3	hand	6"	8/11/03	<2.0	41	14	54	61	<1.0	<1.0	ND ¹
B-3	hollow stem	5'	8/13/03	<2.0	49	<10	19	18	<1.0	<1.0	ND
B-4	hollow stem	3	8/14/03	<2.0	37	25	45	77	<1.0	<1.0	ND ²
B-4	hollow stem	5'	8/14/03	<2.0	74	<10	69	55	<1.0	<1.0	ND ³
B-18	hollow stem	6"	8/13/03	<2.0	70	15	37	24	<1.0	<1.0	ND
B-18	hollow stem	5'	8/13/03	<2.0	75	<10	78	61	<1.0	<1.0	ND

¹Toluene detected at 13 ppb

²Toluene detected at 110 ppb

³Toluene detected at 10 ppb

Table 5
Groundwater Analytical Results
BLFP Phase II Investigation
Parcels South of Glendale Drive
Analytical results reported in parts per billion (ug/L)

Boring number	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-2	8/15/03	<20	2,000	420	3,000	3,500	<0.30	<1.0	ND
B-13	8/15/03	36	2,500	120	3,900	3,700	<0.30	<1.0	ND
B-16	8/15/03	<20	1,900	320	2,500	3,100	0.49	<1.0	ND ¹

0.036 2.5 0.4 3.9 3.7 0.00049

¹ Toluene detected at 0.87 ppb

Table 6
Groundwater Analytical Results
BLFP Phase II Investigation
Parcels North of Glendale Drive
Analytical results reported in parts per million (ug/L)

Boring number	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-11	8/13/03	<10	180	21	210	190	<0.30	<1.0	ND
B-12	8/14/03	<10	350	53	590	690	<0.30	<1.0	ND
B-14	8/14/03	<10	440	31	560	520	<0.30	<1.0	ND
B-17	8/14/03	<10	940	230	1,500	1,300	<0.30	<1.0	ND
B-19	8/14/03	<10	1,200	100	930	1,600	<0.30	<1.0	ND

1.2 0.1 1.5 1.6 .0603

Table 7
Groundwater Analytical Results
Aalfs Phase II Investigation
Aalfs Parcels
Analytical results reported in parts per billion (ug/L)

Boring number	Date sampled	Cadmium	Chromium	Lead	Nickel	Zinc	Pentachloro-phenol (PCP)	Tetrachloro-phenol (TCP)	Volatile Organics
B-3	8/13/03	<10	770	<10	1,000	750	<0.30	<1.0	ND
B-4	8/14/03	<10	320	25	250	320	<0.30	<1.0	ND
B-18	8/13/03	<10	780	71	940	1,100	<0.30	<1.0	ND

